



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/797,725

03/11/2004

Albert Jan Hendrik Klomp

081468-0308636

4128

909

7590

06/30/2006

PILLSBURY WINTHROP SHAW PITTMAN, LLP  
P.O. BOX 10500  
MCLEAN, VA 22102

EXAMINER

GUTIERREZ, KEVIN C

ART UNIT

PAPER NUMBER

2851

DATE MAILED: 06/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/797,725	<b>Applicant(s)</b> KLOMP ET AL.	
	<b>Examiner</b> Kevin Gutierrez	<b>Art Unit</b> 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1-18-06</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Response to Arguments***

1. Applicant's arguments, see Remarks, filed March 7, 2006, with respect to the claims have been fully considered and are persuasive. The objection(s) and rejection(s) of the claims have been withdrawn.

***Claim Objections***

2. Claim 1 is objected to because of the following informalities: claim 1, line 6 - "said object handler" seems to typographical error. It should be replaced with "said handler chamber" as suggested by the Examiner. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-22 are rejected under 35 U.S.C. 102(e) as being anticipated by del Puerto et al. (US 2003/0082466) in view of Fuse et al. (5,217,501).

Regarding claim 1, Del Puerto et al. disclose

- “at least one load lock (104) constructed and arranged to transfer an object between a first environment (104; alignment load lock) and a second environment (106; wafer exchanger chamber);
- an object handler (109; robot) comprising a handler chamber (106) in which said second environment prevails, said object handler (109) and said at least one load lock (107) being constructed and arranged to transfer said object between said object handler and said at least one load lock ([0031], lines 14-16); and
- a lithographic projection apparatus comprising a projection chamber (111; lithography patterning chamber);
- wherein said handler chamber (106) and said projection chamber (111) can communicate for transferring of said object between said handler chamber (106) and said projection chamber ([0032], lines 4-7), and

Del Puerto et al. disclose at least one load lock chamber with a load lock chamber (104), but does not disclose “a load lock chamber which is provided with at least two mutually distinct object supports, each object support being configured to individually support said object.”

However having “a load lock chamber which is provided with at least two mutually distinct object supports, each object support being configured to individually support said object” is known to the art as it is evident by the teaching of Fuse et al. (col. 4, line 26-29, where there are numerous wafers stored in a stocker). Thus, it would have been obvious to one having ordinary skilled in the art at the time

Art Unit: 2851

the invention was made to modify the load lock chamber of Del Puerto et al. by having at least the purpose of increasing the production of wafer fabrication.

Regarding claim 2, Del Puerto et al. further disclose “wherein said second environment (106) has a lower pressure than said first environment ([0031], lines 7-13).”

Regarding claim 3, Del Puerto et al. further disclose “wherein said load lock (107) further comprises evacuation devices ([0030], lines 12-15; [0031], lines 3-4).”

Regarding claim 4, Del Puerto et al. further disclose “wherein said load lock (104) further comprises door devices (102, 107; gate valves) constructed and arranged to close said load lock chamber during evacuation and to open said load lock chamber to permit said object to be positioned into said load lock chamber and to respectively permit said object to be removed from said load lock chamber ([0031], lines 7-14).”

Regarding claim 5, Del Puerto et al. further disclose “wherein said load lock (104) comprises volume decreasing devices constructed and arranged to decrease said gas volume ([0031], lines 7-10).”

Regarding claim 6, Del Puerto et al. further disclose “wherein said volume decreasing devices ([0031], lines 7-10) are adapted to decrease said gas volume adjacent said surface of said object positioned on at least one of said object supports ([0031], lines 14-16, where wafers are transferred in and out of wafer exchange chamber in different pressured-environments).”

Regarding claim 7, Del Puerto et al. further disclose “wherein said at least one of said object supports comprises a support plate (211; chuck) of a size about equal to

or larger than said object to be supported (see fig. 2A, where 211 is substantially equal in size to the object 207),

wherein a ceiling plate (201; alignment load-lock roof) is provided above said at least one of said object supports, said ceiling plate having a size of about equal to or larger than said object (see fig. 2A, where 201 is larger than 207); and

wherein said volume decreasing devices comprise a positioning device (202; camera) constructed and arranged to decrease the distance between said support plate (211) and said ceiling plate prior (201) to and/or during evacuation of said load lock chamber (104) and to increase said distance between said support plate (211) and said ceiling plate (201) prior to said object being removed from or delivery to said at least one of said object supports ([0040], lines 14-18; [0044], lines 4-7)."

Regarding claim 8, Del Puerto et al. further disclose "wherein said positioning devices are adapted to act on one of said support plate and said ceiling plate, while the other of said support plate and said ceiling plate is arranged in a stationary manner in said load lock chamber ([0045], lines 12-17)."

Regarding claim 9, Del Puerto et al. further disclose "wherein said positioning devices are provided at sides of said load lock chamber, at the top of said load lock chamber, or at the bottom of said load lock chamber ([0045], lines 17-18)."

Regarding claim 10, Fuse et al. further disclose "wherein said load lock includes a thermal treatment device constructed and arranged to bring said object to a predetermined temperature or equalize said temperature across said object (col. 7, lines 56-59, where the wafer's temperature is made uniform)."

Regarding claim 11, Fuse et al. further disclose “wherein a said support plate (18; treatment boat) of at least one of said at least two object supports (58, 18) is provided with said thermal treatment device.”

Regarding claim 12, Fuse et al. further disclose “wherein two of said at least two object supports are place one above the other (see fig. 7, where wafers 20 are vertically stacked), and wherein said thermal treatment device is positioned between said two of said at least two object supports (col. 3, lines 58-63).”

Regarding claim 13, Fuse et al. further disclose “wherein said thermal treatment device comprises lines (10; process tube) and a fluid pumping system constructed and arranged to pump fluid through said lines (col. 6, lines 33-36, where gas is carried out through tubes), said lines being arranged such that said lines are in thermal contact with said corresponding support plate (col. 6, lines 17-19).”

Regarding claim 14, Fuse et al. further disclose “wherein said lines are provided internally in one of said support plate and a wall of said load lock chamber (col. 6, line 8 and lines 17-19).”

Regarding claim 15, Del Puerto et al. further disclose a load lock chamber with an evacuation device ([0031], lines 7-11). Del Puerto et al. disclose a bottom wall (231), but does not disclose wherein said load lock chamber comprises a top wall.

However, it is inherent for a chamber to comprise of a top wall, which an enclosure is necessary to utilize a vacuum space as disclosed by Del Puerto et al. Thus, it would have been obvious to one ordinary skilled in the art at the time the

invention was made to further modify the load lock chamber of Del Puerto et al. for at least the purpose of maintaining a vacuum space for transferring of the wafer.

Regarding claim 16, Del Puerto et al. further discloses “wherein said venting opening and said evacuation opening are arranged substantially centrally with respect to said object supports, said object supports being arranged one above the other (204, 205, 206; wafer supports; [0040], lines 9-11).”

Regarding claim 17, Del Puerto et al. further disclose “wherein said projection chamber (111) is a vacuum chamber and wherein said lithographic projection apparatus comprises vacuum devices constructed and arranged to establish a vacuum in said vacuum chamber ([0031], lines 7-11; [0033], line 3).”

Regarding claim 18, Del Puerto et al. further

- “a radiation system constructed and arranged to provide a beam of radiation ([0004], lines 15-17);
- a support structure to support a patterning devices, said patterning devices serving to pattern said beam according to a desired pattern ([0006], line 5-9);
- a substrate table for holding a substrate [0004], line 10); and
- a projection system constructed and arranged to project said patterned beam onto a target portion of said substrate ([0004], lines 11-12).”

Regarding claim 19, Del Puerto et al. further disclose “wherein said object is a semiconductor wafer ([0004], line 5).”



Regarding claim 20, Del Puerto et al. further disclose “wherein said door device comprises a first door (102; gate valve) towards said first environment and a second door (107; gate valve) towards said second environment.”

Regarding claim 21, Del Puerto et al. further disclose “further comprising two or more of said load locks (104, 105, 114).”

Regarding claim 22, Del Puerto et al. further disclose all of the claimed limitations set forth in claim 1 and further discloses “wherein said object handler (109) is integrated in said load lock, so that said handler chamber (106) and said load lock chamber are a single unit ([0031], lines 12-16, fig. 1, where the gate valves can be controlled to implement the load lock chamber and handler chamber to operate as a single unit chamber).”

### ***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Gutierrez whose telephone number is (571)-272-5922. The examiner can normally be reached on Monday-Friday: 7:30 a.m. - 4:30 p.m..

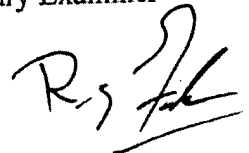
If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Judy Nguyen can be reached on (571)-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin Gutierrez  
Examiner  
Art Unit 2851

Monday, June 19, 2006

Rodney Fuller  
Primary Examiner

A handwritten signature in black ink, appearing to read 'R. Fuller', with a stylized flourish at the end.